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Case Report

Patterned injuries caused by wooden plank

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Abstract

Wooden planks of different dimensions are commonly used in construction of buildings, fence of houses, bullock-carts and walls of huts. There is plenty of opportunity for wooden plants to be used as assault implements. Three cases of homicide are reported. In each case a wooden plank was the weapon of offence. The causes of death were respectively anal impalement injury, liver rupture and head injury. Case 1: A 30-year-old man who was beaten by a wooden plank and had it inserted per anum was found alive by a police officer after ~48 h. He sustained multiple patterned contused abrasions and death was attributed to purulent peritonitis due to perforation of small intestine by the wooden plank. Case 2: A 50-year-old man working as a security guard at a building construction site was killed by his 21-year-old son by beating him with a wooden plank found around the construction site. The deceased sustained multiple contusions, abrasions, typical patterned contused abrasions and lacerations externally. Death was attributed to shock due to ruptured liver. Case 3: A 13-year-old female was killed by her 19-year-old male paternal cousin with one stroke of a wooden plank over head. At autopsy she was having a lacerated wound to forehead below which there was a patterned fracture of skull. Death was attributed to sub-arachnoid hemorrhage following head injury.

We have recorded peculiar patterned abrasions, patterned fracture with wooden fragment and part of impaled wooden plank in abdominal cavity. These types of injuries are rare. The cases emphasise the need for accurate description of these injuries with photographs in order to achieve effective evaluation and recognition of this type of patterned wounds as they correspond to specific weapons.

Keywords: Patterned injuries; Blunt force; Tool marks; Wooden plank; Anal impalement; Homicide; Criminalistics

1. Introduction

Wooden planks of different dimensions are commonly used as timber at building construction sites in urban India. As in many countries they may also be used for fencing the house and construction of domiciles especially in deprived areas in urban India and huts in rural India. They are also used for constructing bullock-carts or animal driven carts. Easy availability of these planks at the particular site make them a common weapon of assault. Homicides by using the material available at the scene of crime are usually "non-pre-planned homicides". These homicides are commonly the result of instigating verbal assault and insult to which the accused tries to find out the suitable weapon at that site only and wooden plank becomes the most suitable weapon of offence. Three homicides are discussed.

1.1. Case 1

A 30-year-old male was found roaming around red light area of the city. People thought that he was some beggar as he was wearing only a shirt tied around his waist which was dirty and torn at places. He was looking toxic and sick. A police constable on round duty found him and took him to the hospital. On the way he was very uncomfortable and unable to seat in the auto-rickshaw. When asked by the police constable he told that ~48 h back at night he and his two friends were having food and drinks in the local

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dhaba. After a few drinks they had quarreled on issue related to the mistress of one of the accused so his friends beat him with fists and a wooden plank removed from the fence of the dhaba, and finally inserted the same plank through his anus.

The casualty medical officer at the hospital found that there were multiple abrasions and contusions on the body. On examination the general condition of the patient was not good. The surgical resident attended the patient immediately and tried to remove the foreign body in the anus without radiological and anesthetic assistance. As soon as the wooden plank was removed, the patient went into shock and died subsequently in spite of all resuscitative measures.

The autopsy was conducted on the same day of death, after ~6 h. There were multiple contusions, grazes, scratches, contused abrasions and contusions with patterned abrasions at places. A laceration with fractured nasal bone was present. In the lithotomy position, a puncture lacerated wound was found at 6 o'clock position to the anus (Fig. 1). Lacerating the external anal sphincter and puborectalis muscle, sparing the rectum, it entered into the pelvic cavity through para-rectal fossa by perforating the diaphragmatic part of the pelvic fascia just posterior to sacrogenital fold on left side.

On internal examination the peritoneum was inflamed, and the peritoneal cavity contained ~500 ml purulent fluid containing pus cells and intestinal contents. A part of wooden plank of length 20 cm, 2 cm wide and 0.8 cm thick was found in the abdominal cavity, corresponding to the wound to the anus, entering below sigmoid colon and running upwards and penetrating into the small intestine so as to create a puncture wound ~30 cm away from pylorus (Fig. 2).

The part of wooden plank which was removed by the surgical resident was also brought with the decedent, which was of 39.5 cm in length, 4 cm (maximum) broad, and 1 cm (maximum) thickness and physically aligning with the part

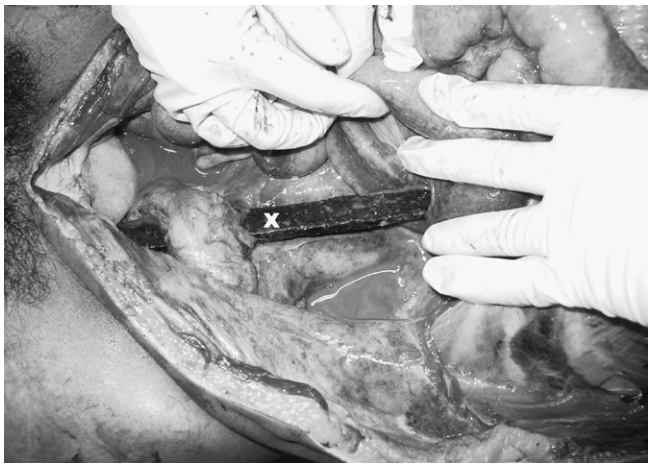

Fig. 2. Piece of wooden plank in abdominal cavity.

removed from abdominal cavity. Part "A" of the wooden plank (Fig. 3) was precisely corresponding to injury "a", a patterned contused abrasion on left side of face (Fig. 4). Border "B" of the wooden plank (Fig. 5) was corresponding with patterned contused abrasions "b" on back of left forearm (Fig. 6), right side of chest (Fig. 7), back of trunk (Fig. 8) and abrasion to right side of neck (Fig. 9) in respect to their size and shape. Part "C" of the plank corresponds with patterned abrasion "c" on right side of chest.

Later in the investigation it was stated by an eye witness that he had seen a man beaten by two men. The victim had fallen on the ground and trying to remove the "stick" inserted in his anus. However, one of the assailants kicked on the outer end of the stick three times and impaled it, due to which the victim was crying out of pain and fell motionless after some time and the assailants left him there.

Fig. 1. Impalement wound to anus.

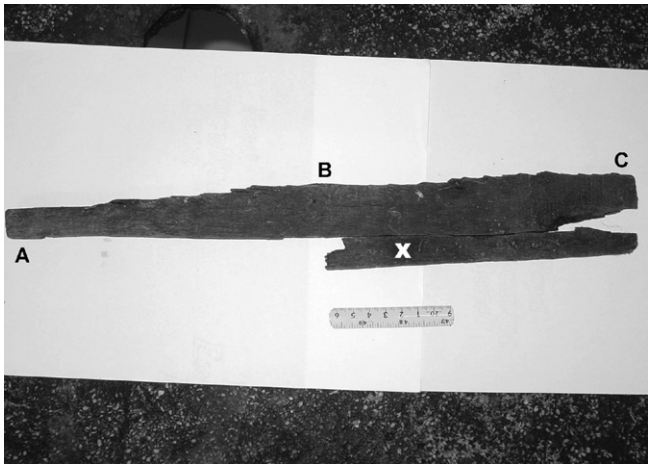

Fig. 3. Wooden plank – the weapon of offence in case 1. The upper part of the plank was removed in the emergency department and the lower piece was removed at autopsy.

Fig. 4. Patterned contused abrasion "a" caused due to "A" end of the wooden plank shown in Fig. 3.

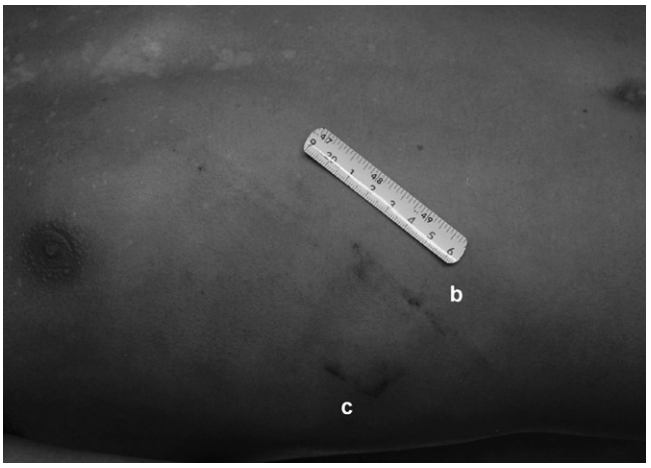

Fig. 7. Patterned contused abrasions on right side of chest. "b" caused by border "B" and "c" by end "C" of wooden plank shown in Fig. 3.

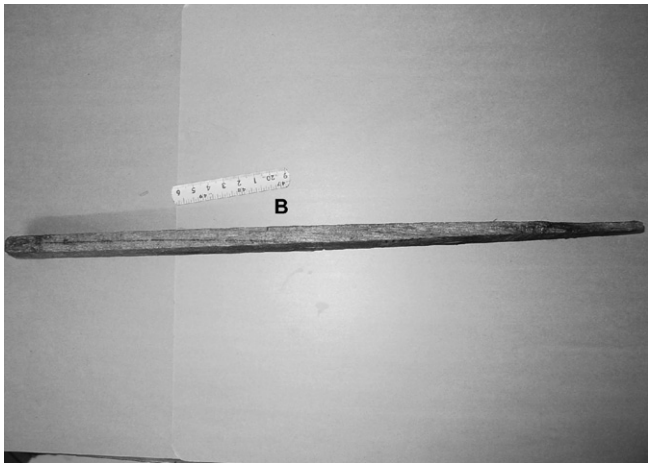

Fig. 5. Border of the wooden plank. Note the gradual narrowing.

Fig. 8. Patterned contused abrasions on the back of trunk "b" caused by border "B" in Fig. 5.

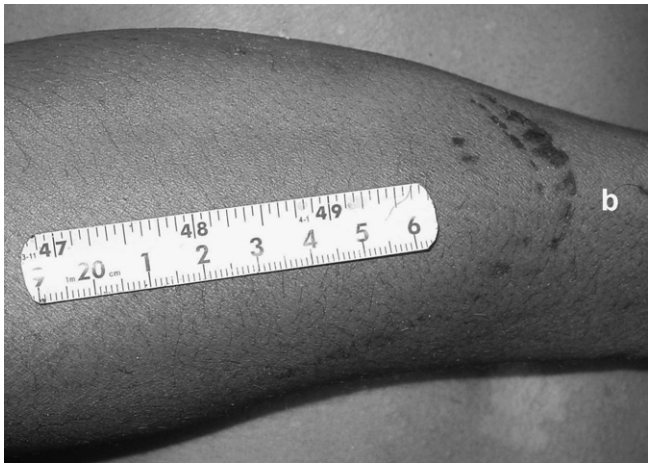

Fig. 6. A curved patterned abrasion on left forearm caused by border of plank shown in Fig. 5. Note direction of the abrasion. This proves that the curved abrasions are possible with rigid blunt weapon due to relative flexibility of the skin and underlying tissue.

Fig. 9. Graze abrasion caused due to border of the wooden plank.

Fig. 10. Patterned abrasions on left side of abdomen caused by wooden plank shown in Fig. 12.

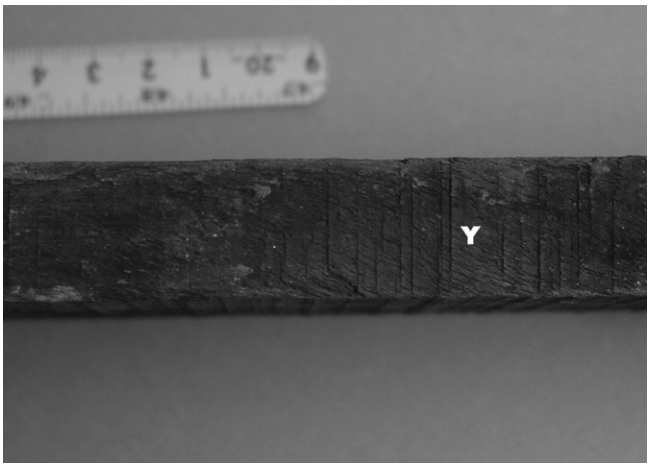

Fig. 12. Wooden plank – the weapon of offence in case 2. Note the tool marks caused due to bandsaw while cutting the wood in sawmill which was common feature of weapon in all the cases.

1.2. Case 2

A 50-year-old male security guard of a construction site was beaten to death by his son with a wooden plank of size $71 \times 7.5 \times 2$ cm, in a quarrel for the reason that the victim was alleging that his wife (mother of accused) was having an extra-marital affair. The deceased sustained multiple contusions, abrasions and lacerations externally. He also sustained imprint patterned abrasions over right arm and left side of abdomen. The targeted regions were abdomen, right forearm and hand, legs, ankles and back of trunk. Internally abdominal cavity contained ~1100 ml blood and clots. His liver was ruptured on anterior surface of left lobe. The patterned abrasion present on left side of abdomen (Fig. 10) and right arm (Fig. 11) precisely corresponds with border of wooden plank (Fig. 12).

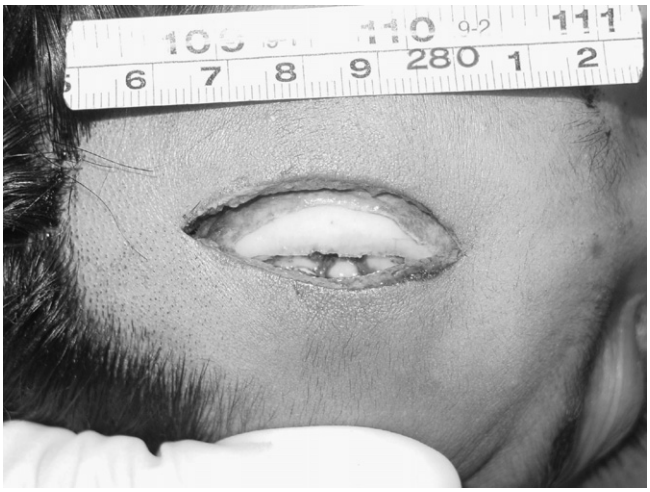

Fig. 13. Laceration to forehead.

Fig. 11. Patterned abrasions on anterior aspect of right arm caused by wooden plank shown in Fig. 12.

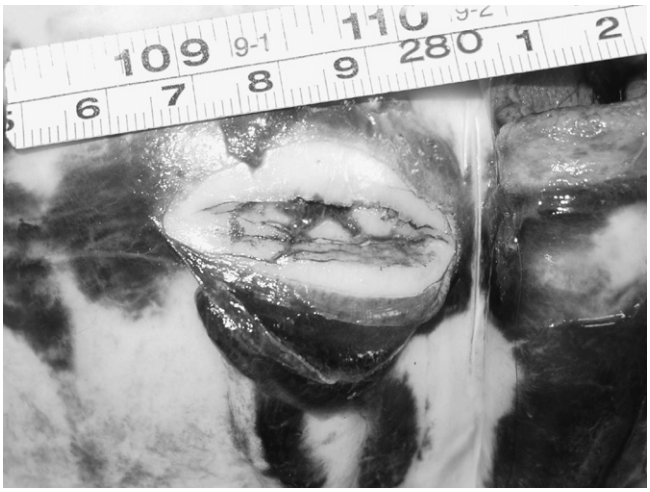

Fig. 14. Patterned fracture to skull.

1.3. Case 3

Because she had been talking with a boy from the same village a 13-year-old female was struck by a wooden plank of size $121 \times 10 \times 2$ cm removed from a nearby bullock-cart, on forehead by her 19-year-old male paternal cousin. At autopsy a lacerated wound was present over forehead of size 3.6×1.3 cm, bone deep, directing downwards and to right (Fig. 13). Scalp reflection showed distinctive punched-in, longitudinal, directing to right and downward, outer table patterned cranial fracture subjacent to the scalp laceration (Fig. 14). Wood fragments were detected in the injury. Internally sub-arachnoid hemorrhage was present.

2. Discussion

In blunt force homicides, usually single weapon is involved and domicile of the victim is the commonest scene of crime.[1] The identification of the weapon used to inflict the unique pattern on the body is of utmost importance, since it is the link that tied the suspect to the scene and to the deceased.[2] Hence, an evaluation of patterned injuries and impressions is an important part of the armamentarium of the forensic pathologist in crime or accident reconstruction.[3] Identifying a patterned mark produced by a specific weapon requires finding sufficient correspondence in both class and individual characteristics in the mark and on the tool surfaces. Class characteristics include size and general configuration of tool and individual characteristics include structure or combinations of structure which are unique and distinctive of just one specific weapon. Identification of a patterned mark necessitates a detailed study of the specific weapon in question and an evaluation of its surface structure.[4]

Surface of wooden planks used in the preceding cases has characteristic surface and borders which are ordinarily found on the wooden planks. The marks left by the woodworking tools like saw and planes are commonly found on timber. In the given cases the wooden planks shows the tool marks caused by resawing bandsaw in sawmill. These tool marks depend on the tension, width, pitch, number of bent teeth and tooth spacing of the saw blade while sawing the wood. Bandsaw cuts are almost always rough and it leaves a cut surface riddled with thin vertical ridges, one after another, some distance apart. Usually all sides of the plank or block display these ridges as the wooden planks are the result of sawing the wood from all sides (Fig. 12) to achieve the required dimension.

Patterned contused abrasions depicted in Figs. 6–8, 10 and 11 correspond in both class and individual characteristics in the mark to border and edges of the respective wooden planks. The graze abrasion depicted in Fig. 9 and fracture in Fig. 14 corresponds with edge of the respective wooden plank. Patterned contused abrasions depicted in Figs. 4 and 7 correspond with the ends of the respective wooden plank.

In case 1 the same wooden plank was impaled through anus with which the victim was beaten. The homicide by impalement through anus is known in the literature. Adult victims were reported to be impaled by walking stick, sharp stick or broomstick through rectum and the children were reported to be impaled by spoon or wax candle. The accused in these cases were either psychopath, homosexual or sexual abuser.[5–8] Deaths caused from injuries, by the purposeful introduction of an object in the rectum are infrequent and unusual.[9] From a forensic point of view, impaling is quite an unusual method of killing. It was one of the most revolting punishments ever devised by the human imagination.[10] It might be intended to kill fast, or to kill slowly to torture the victim. When the object is impaled through the rectum, usually it does not display any outward manifestations of physical violence. Because of the potential complications, rectal foreign bodies should be regarded seriously and treated expeditiously, if the victim is alive. Procedures including rectal examination, proctoscopy and abdominal radiography are of vital importance before removing the foreign body.[11]

In case 2 the cause of death was shock due to injury to liver. The accused was arrested immediately after the murder.

Fractures of the skull vault were influenced by various factors, which include the thickness of the vault and the force of the impact. Rapid dynamic loading and the force probably acted for a very short time. The size of impacting device (that is, the border of wooden plank) and the force of impact are directly related to the magnitude of the dynamic load.[12] In case 3, a large amount of kinetic energy must have been delivered on the forehead over a small area. The degree of local deformation in this case was enough to cause patterned fracture of the skull.

In summary, the preceding cases demonstrate unique patterned injuries produced by wooden planks. The patterned injuries depicted are a result of the distinctive tool marks on wooden planks caused due to cutting the wood by bandsaw in sawmill. These cases will be helpful for the forensic pathologists to recognize the injuries caused by wooden planks, and will also serve to reinforce the need for the best possible documentation and photography whenever patterned injuries are present.

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